RABINOVICH, A.I., kand.tekhn.nauk; Prinimala uchastiye: STEPANOVA, Ye.I.,
inzh.; KARAMYSHEV, I.A., inzh., nauchnyy red.; BUDARINA, E.M.,
red.izd-va; KOMAROVSKAYA, L.A., tekhn.red.

[Precast undulate arches] Sbornye volnistye svody. Moskva,
Gos.izd-vo lit-ry po stroit, arkhit. i stroit materialam, 1962.
113 p. (Akademiia stroitel'stva i arkhitektury SSSR. Institut
stroitel'nykh konstruktsii. Nauchnye soobshcheniia, no.18).
                                        (MIRA 16:2)
              (Roofing, Concrete)

L 2767-66   EWT(1)   IJP(c)/   AT

ACCESSION NR: AP5020128

UR/0109/65/010/008/1494/1499
621.391.883.2:621.383.42

27

AUTHOR: Rabinovich, A. I.

TITLE: Effect of the geometrical dimensions of a photocell on its signal-to-noise ratio

SOURCE: Radiotekhnika i elektronika, v. 10, no. 8, 1965, 1494-1499

TOPIC TAGS: photocell, photoresistor, signal to noise ratio

ABSTRACT: The widely accepted notions of the effect of photocell dimensions on its noise spectral density and signal-to-noise ratio hold true only if a spatial δ-correlation of conductivity fluctuation is assumed. General integral formulas are derived which permit estimating the effect of photocell dimensions on the statistical characteristics of its noise, for an arbitrary correlation function of its conductivity. The formulas are simplified for the particular case when the spatial correlation of conductivity is zero. The spatial correlation of carrier-density fluctuation is estimated for an intrinsic semiconductor having a surface recombination. "The author wishes to thank V. L. Bonch-Bruyevich and S. A. Kaufman for a useful discussion of the above results." Orig. art. has: 1 figure and 20 formulas.

[03]

Card 1/2

L 2767-66
ACCESSION NR: AP5020128

ASSOCIATION: none

SUBMITTED: 07Mar64

NO REF SOV: 002

ENCL: 00

OTHER: 012

SUB CODE: EM, EC

ATD PRESS: 4/02

Card 2/2

RABINOVICH, A.I.

Adequate conditions for monotonous change of a signal-to-noise
ratio during storage. Radiotekh. i elektron. 10 no.11:2059-
2062 N '65.   (MIRA 18:11)

SOV/68-59-7-31/33

AUTHOR: Rabinovich, A.I.

TITLE: Experience in Operating a Quenching Wagon Made of
           Stainless Steel

PERIODICAL: Koks i khimiya, 1959, Nr 7, p 76 (USSR)

ABSTRACT: At the Yasinovskiy Coking Works the service life of the
           quenching wagon amounts to about four months and the
           yearly cost of repairs amounts to about 240 000 roubles.
           For experimental purposes a quenching wagon for the new
           battery with ovens of a large capacity ($30m^3$) was made
           to a large extent from stainless steel 1Kh18N9T. On
           inspection after six months of operation it was found
           that it can operate without major repairs five to six
           times longer than a wagon made from ordinary steel. The
           cost of the experimental wagon of stainless steel amounted
           to 255 000 roubles as against 145 000 for an ordinary
           wagon. This indicates the advisability of making quenching
           wagons from stainless steel. It is pointed out, however,
           that some parts of ordinary wagons made from chromium
           steels Zh-1, Zh-2 and Zh-27 (without nickel) also showed
Card 1/2   an improved performance. It is therefore concluded that

SOV/68-59-7-31/33

Experience in Operating a Quenching Wagon Made of Stainless Steel
the use of cheaper chromium steels without nickel should
give satisfactory results.

ASSOCIATION: Yasinovskiy koksokhimicheskiy zavod (Yasinovskiy
Coking Works)

Card 2/2

RABINOVICH, A.I.

Lengthening the service life of equipment. Koks i khim. no.11:57-58 '63.   (MIRA 16:12)

1. Yasinovskiy koksokhimicheskiy zavod.

RASHCHUK, N.L., inzh.-khimik (Chelyabinsk); RABINOVICH, A.L., inzh. (Chelyabinsk)

Experience in dry neutralization of spent pickling baths.
Vod.i san.tekh. no.4:36 Ap '65.

(MIRA 19:1)

RABINOVICH, A. L.   FA16764

USSR/Pulleys   Feb 1947
        Stresses

"Stresses in a Pulley," A. L. Rabinovich, N. M.
Fedotov, 35 pp

"Inzhenernyy Sbornik" Vol III, No 2

Studies of a pulley subjected to a uniform radial
load along the arc of contact between a cable and
the rim, with concentrated loads applied at each
end of the arc.

                                              16T64

RABINOVICH, A. L.

p. 1,4

PHASE I BOOK EXPLOITATION   1035

Moscow. Fiziko-tekhnicheskiy institut

Issledovaniya po mekhanike i prikladnoy matematike (Studies of
    Mechanics and Applied Mathematics) Moscow, Oborongiz, 1958.
    218 p. (Series: Its: Trudy, vyp. 1) 2,400 copies printed.

Ed. (Title page): Sokolovskiy, V.V., Corresponding Member, USSR
    Academy of Sciences; Ed. (Inside book): Zaytseva, K.Ya., En-
    gineer; Ed. of Publishing House: Kuznetsova, A.G.; Tech. Ed.;
    Rozhin, V.P.; Managing Ed.: Zaymovskaya, A.S.

PURPOSE: This book contains a collection of scientific articles
    intended for scientific workers, engineers and senior students
    in the fields of mechanics and applied mathematics.

COVERAGE: The book contains 14 scientific articles on mechanics
    and applied mathematics. Seven articles deal with various
    problems of the mechanics of materials. Problems of elastic,
    plastic and elastic-plastic deformations of various materials

Card 1/6

Studies of Mechanics and Applied (Cont.)   1035

under different conditions are studied. Three articles deal
with problems of fluid mechanics and gas dynamics. The last
4 articles are on applied mathematics.

Rzharitsyn, A.R., Doctor of Technical Sciences. Taking Humidity
and Temperature into Account in Problems of Creep   3
The article contains the following sections: Introduction;
1) Fundamental physical dependence [between stress and defor-
mation]; 2) Approximate solution; 3) Example taking into ac-
count the effect of temperature; 4) Another substantiation of
the method; 5) Problems concerning drying of a thin plate
fixed at the edges; 6) Taking into account the effect of set-
ting concrete.

Rabinovich, A.L., Candidate of Technical Sciences. Torsion of
an Element of a Circular Ring (General Saint-Venant Problem)   17
The article contains the following sections: Introduction;
1) Fundamental equations; 2) Checking the solution and ex-
pression for rigidity in torsion; 3) Stress function; 4) Ex-

Card 2/6
2/5

Studies of Mechanics and Applied (Cont.)   1035

pression of the potential energy of deformation; 5) Segment of [circular] ring with rectangular cross section.

Meshkova, L.A. Certain Problems on Ultimate Equilibrium of Rocks
The article contains the following sections: Introduction; 1) Ultimate equilibrium of semiarches with a free contour; 2) Approximate solution; 3) Determination of the pressure of a rock on a curved wall; 4) Approximate solution in the neighborhood of a wall contour.

Geogdzhayev, V.A. Plastic Plane Deformation State of Orthotrop-
ic Media   55
The article contains the following sections: Introduction; 1) Equilibrium of a half plane; 2) Slip of a strip; 3) Distribution of stresses in the neighborhood of a slot located at a finite distance from a free straight-line boundary.

Geogdzhayev, V.O. Certain Problems in the Elastic-plastic De-
formation of Anisotropic Materials   69

Card 3/6
     5

Studies of Mechanics and Applied (Cont.)   1035

Kukudzhanov, U.N. Elastic-plastic Bending of Thin-walled Beams
Taking into Account Tangential Stresses   97
    The article contains the following sections: Introduction;
    1) Fundamental equations; 2) Rectangular cross section; 3)
    Ultimate state [of a beam]; 4) Thin-wall rods composed of
    straight-line elements; 5) Conclusions.

Rabinovich, A.L., Candidate of Technical Sciences; Shtarkov,
M.G. and Dimitriyeva, Ye.I. Methods of Determining the Values
of Elastic Constants of Glass Textolite at Raised Temperature 115
    The article contains the following sections: Introduction;
    1) Modulus of elasticity of KAST-V [glass textolite] depend-
    ing on direction of fibres (at room temperature) 2) Depend-
    ence of the strength of KAST-V on the direction of tension
    at room temperature; 3) Effect of temperature "hardening"
    and of repeated loadings on KAST-V properties; 4) Develop-
    ment of the methodology of temperature testing of KAST-V
    with strain pickups; 5) Methodology of tests with Martens
    device; 6) Frequency method for determination of the

Card 4/6
     5

Studies of Mechanics and Applied (Cont.)   1035

   modulus of elasticity of KAST-V; 7) Stress-strain relation-
   ship of KAST-V for different directions in the temperature
   function; 8) Dependence of the modulus of elasticity of
   KAST-V on temperature for various directions. 9) The value
   of Poisson's ratio for KAST-V in temperature function for
   various directions.

Moiseyev, N.N., Doctor of Physical and Mathematical Sciences.
Oscillations of a Body Floating in a Bounded Reservoir.   145
   The article contains the following sections: Introduction;
   1) Potential of velocities; motion equation. Mathematical
   statement of a problem; 2) General properties of the solu-
   tion of the system (1.16); 3) Some remarks on the effective
   determination of principal oscillations; 4) Supplements
   and generalizations.

Pokhozhayev, S.I. A Problem of Supersonic Flow   167
   The article contains the following sections: Introduction;
   1) Interaction of centered waves; 2) Reflection from a

Card 5/5
   5/5

24(6)   PHASE I BOOK EXPLOITATION   SOV/2250

Akademiya nauk SSSR. Institut fiziki zemli

Nekotoryye voprosy mekhaniki deformiruyemykh sred (Some Problems
    in the Mechanics of Deformable Media). Moscow, Izd-vo AN SSSR,
    1959. 219 p. (Series: Its: Trudy, Nr. 2 /169/) Errata slip
    inserted. 2,000 copies printed.

Ed.: V.A. Magnitskiy, Doctor of Technical Sciences; Ed. of Publish-
    ing House: V.A. Kalinin; Tech. Ed.: Yu. V. Rylina.

PURPOSE: This book is intended for engineers and geophysicists
    concerned with problems of deformations.

COVERAGE: This collection consists of eight articles on the mech-
    anics of deformations in solid plastic media as applied to the
    solution of geophysical and engineering problems. No personal-
    ities are mentioned. References appear at the end of each
    article.

TABLE OF CONTENTS:

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Some Problems (Cont.)   SOV/2250

Gurevich, G.I., and A.L. Rabinovich.— Relation Between Stresses
and Displacements in Large Deformations for the Case of a One-
dimensional Problem   3

   In the analytical study of geometrical and kinetic deformations
   of elastic and residual nature, which are of signficance in at-
   tenuation and dispersion of seismic waves, the authors derive
   general equations of motion.   12

Gurevich, G.I. Relation Between Stresses and Displacements in
Large Deformations for the General Case of a Three-dimensional
Load   27
   The author considers the application of Maxwell's equation
   to a case of a residually deformed solid-liquid body which
   can be considered as a "massive" one and to which the usual
   formulas of the theory of elasticity are applicable.

Gurevich, G.I. Generalized Maxwell Equation for Three Measurements
Taking Into Consideration Small Elastic Aftereffect Deformations 60
   In the study of rock behavior in cases of static and dynamic

Card 2/5

Some Problems (Cont.)   SOV/2250

loading, the usual Maxwell's equation is not adequate. Taking
into account the additional components of deformation, a new
equation embodying the relationship between shear deformation
and the velocity of full shear deformation is analyzed.

Gurevich, G.I. Initial Considerations in the Approach to Tectonic
Modeling   75
The author deals with considerations in the application of
the principle of similitude to the modeling of tectonic and
hydrodynamic processes in the solution of geodynamic problems.
The following names are mentioned: B.L. Shneyerson, Ye. N.
Lyustikh, A.A. Ilyushin, N.V. Gzovskiy.

Khaykovich, I.M. Propagation of Vibrations in a Medium With Re-
laxation of Stresses   145
The theory of propagation of seismic waves in an ideally
elastic medium is not adequate for purposes of interpretation.
The present article establishes the quantitative corrections
for a half-space subjected to axially symmetric loading. Max-
well's three-dimensional equation is used in finding a solution
for corrections.   The following names are mentioned: G.I.
Card 3/5

Some Problems (Cont.)   SOV/2250

Petrachen', K.I. Ogurtsov.

Khaykovich, I.M. Beam Method of Computing the Wave Intensity in
a Relaxing Medium With a Large Relaxation Time   179
    The author refers to various scientists offering the solu-
    tion of nonstationary problems in the theory of elasticity
    leading to the determination of the intensity and the force
    of reflected waves. He introduces a so-called beam method
    for computing the propagation of a wave in nonideal elastic
    media. The following names are mentioned: G.I. Petrashen',
    V.M. Babich, G.O. Gurevich.

Sherman, D.I. Problem of the Stressed Condition of a Semiplane
Without External Load and With Two Sunken Circular Orifices   187
    The article discusses the distribution of stresses caused
    by gravity in media weakened by holes or openings. The
    problem is of interest in analyzing the rock pressure in the
    neighborhood of shaft openings and for the study of seismic
    conditions.

Card 4/5

Some Problems (Cont.)   SOV/2250

Keylis-Borok, V.I., and V.I. Ul'yanova. Problem of Creep in Hollow
Cylinders Under Normal Pressure   211
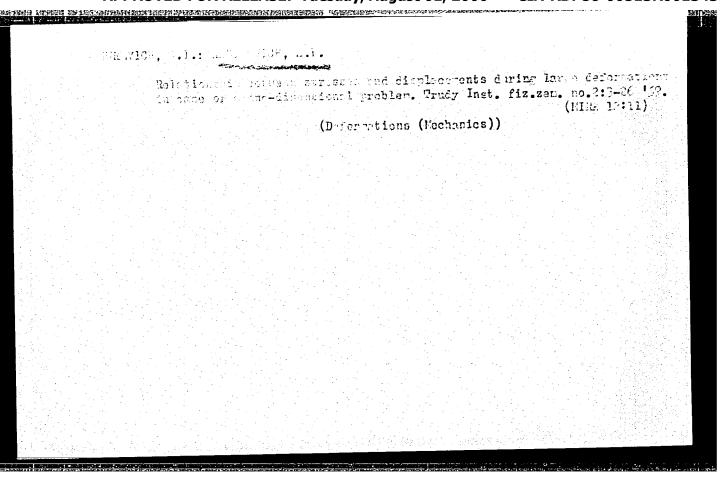   The author considers the process of residual deformation in
    a hollow cylinder and takes into account the time changes of
    stresses and deformations. This problem is of interest in
    theoretical studies of seismic behavior and also in studies of
    the relationship between the creep and interior pressure in
    pipes. The following names are mentioned: A.F. Golovin, L.I.
    Kachanov, A.A. Abramov, L.G. Shershen', I.K. Snitko.

AVAILABLE: Library of Congress

                                                          IS/ec
Card 5/5   10-15-59

BRANION, .J.: ... OP, ...

Relationship between stresses and displacements during large deformations in case of a one-dimensional problem. Trudy Inst. fiz.zem. no.2:3-26 '52.

(MIRA 12:11)

(Deformations (Mechanics))

28385   S/124/61/000/008/036/042

2 4 1200   A001/A101

AUTHOR: Rabinovich, A. L.

TITLE: An approximate method of calculating thick-walled spherical shells

PERIODICAL: Referativnyy zhurnal, Mekhanika, no. 8, 1961, 8, abstract 8V55 ("Tr.
              Mosk. fiz.-tekhn. in-ta". 1959, no. 3, 132-170)

TEXT: Basing on hypotheses of the thin shell theory and considering small
elastic deformations, products of which can be neglected, the author developed an
approximate method for calculating thick-walled spherical shells at symmetrical
strains. The calculation formulae obtained for strains and normal stresses
differ from the formulae used in calculations of thin shells by the appearance
of the factor $1/(1 - y/R)$ which leads to a hyperbolic law for distribution of
these quantities. A solution is obtained for slope $(\alpha < 30^\circ, \text{ctg } \alpha \approx 1/\alpha)$
thick shells, expressed in terms of Tomson's functions. Tabular values of
coefficients of unitary displacements for the spherical segment are presented.
A numerical example of calculations is given for a clamped shell at the central
angle $2\alpha = 60^\circ$ and $R/h = 5.167$.   V. Rekach
[Abstracter's note: Complete translation]

Card 1/1

RABINOVICH, A.L., kand.tekhn.nauk; SHTARKOV, M.G.; DMITRIYEVA, Ye.I.

Regularities in the unifrom deformation of hardened metals in
case of uniaxial stretching. Trudy MFTI no.3:194-246 '59.
(MIRA 13:5)

(Deformations (Mechanics))

RABINOVICH, A.L.

Some mechanical properties of films of the butvar-phenol polymers.
Vysokom.soed. 1 no.7:998-1015 Jl '59.   (MIRA 12:11)

1. Laboratoriya anizotropnykh struktur AN SSSR.
                      (Films)

24831
S/081/61/000/011/039/040
B110/B201

15.8510

AUTHORS: Rabinovich, A. L., Avrasin, Ya. D.

TITLE: Mechanical characteristics of some laminated plastics in connection with the strength of screw and rivet joints

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 11, 1961, 576-577, abstract 11П58 (11P58)(Sb. Steklotekstolity i drugiye konstrukts. plastiki, M. Oborongiz, 1960, 78-107)

TEXT: A study has been made of the strength of lamellar delta cellulose and of the glass-reinforced plastics КACT-B (KAST-V) and CBAM (SVAM) with regard to the working conditions of screw and rivet joints. The values of the coefficients of stress concentrations and strength limits were determined with cutting and contortion. It was shown that the use of a binding agent with increased brittleness leads to a rise of the co- efficient of stress concentrations. Optimum ratios were found between rivet diameter (duralumin) and foil thickness of the material. It is believed that the riveting of laminated plastics with standard rivets can be performed by ordinary technological procedures without using any special

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24831

Mechanical characteristics of some ...

S/081/61/000/011/039/040
B110/B201

instruments. It is, however, advisable that complementary studies be conducted on the most convenient rivet shape to prevent the rivets from tearing loose out of their holes. The optimum main parameters of the joints can be determined from the requirement of equal strength. As to the determination of the pitch of the rivets, the authors recommend to proceed from the destruction diagram. [Abstracter's note: Complete translation.]

Card 2/2

25403
S/122/60/000/004/007/014
A161/A130

$\mid$ ५ $\mathcal{B}$ ५ $\mid$ ꭨ

AUTHORS: Rabinovich, A.L., Candidate of Technical Sciences; Bilik, Sh.M.,
             Doctor of Technical Sciences

TITLE: Determining the compression strength limit of plexiglass tubes

PERIODICAL: Vestnik mashinostroyeniya, no. 4, 1960, 39 - 44

TEXT: Oriented high-strength plexiglass such as CBAM(SVAM), KACT(KAST)
and AГ -4 (AG-4) are suitable for structural tubes including such application as
mine props, but the practical application of such tubes and tube structures is in-
hibited by lack of standard test methods. The authors suggest such a method bas-
ing on data obtained in joint work of Laboratoriya anizotropnykh struktur AN SSSR
(Laboratory of Anisotropic Structures AS USSR) and VUGI. The article includes
theoretical calculations and description of experimental test equipment having
been used. Destruction of tubular specimens of SVAM was watched with several in-
dicators and a high-speed photo-camera. The observations proved sudden brittle
failure in specimen mid. The length radius relation of tubes is analyzed and the
ranges are determined, where the Euler formula and the Hooke law are applicable,
and the finally recommended dimensions for standard test specimens are

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25403

S/122/60/000/004/007/014
Determining the compression strength limit ...   A161/A130

$$1 \approx 1.5 \ D_{mean}.$$

and the specimen wall thickness is recommended to be determined by the inequation

$$\frac{D_{mean}}{\delta} \leq 10 \tag{7}$$

where δ is the wall thickness. Possible deformation (crumpling) of specimen butt ends before maximum compression stress is reached in the specimen mid portion is recommended to prevent by using metal shells holding the ends. B.S. Grachev, G.Ye. Sirin, O.M. Yepaneshnikova and O.M. Belavtseva took part in the work; the technology of tube preparation from SVAM was developed by Candidate of Technical Sciences Ye.N. Rassadina; cylindrical test specimens were prepared by R.L. Levina-Kogan. There are 7 figures, 1 table and 13 references: 12 Soviet-bloc and 1 non-Soviet bloc.

Card 2/2

87143

S/041/60/012/003/007/011
C111/C222

$1 \, 6.41 \, 0 \, 0 \quad \quad 1 \, 6 \, 42 \, 0 \, 0$

AUTHORS: Gopenganz, I.Ye., and Rabinovich, A.L.

TITLE: On a Relation in the Theory of Uniform and Integral Approximations

PERIODICAL: Ukrainskiy matematicheskiy zhurnal, 1960, Vol. 12, No. 3,
pp. 339 - 341

TEXT: Let $W^{(r)}LK$ be the class of those $f(x)$, $f(x + 2\widetilde{\pi}) = f(x)$, having an absolutely continuous $f^{(r-1)}(x)$ and for which it holds $\| f^{(r)} \|_L$ =

$$= \int_0^{2\pi} |f^{(r)}(x)| \, dx \leqslant K \, , \quad r = 1,2,\ldots \, . \quad \text{Let} \quad W^{(r)}MK \quad \text{be the class of those}$$

$f(x)$, $f(x + 2\widetilde{\pi}) = f(x)$, having an absolutely continuous $f^{(r-1)}(x)$ and a bounded $f^{(r)}(x)$, where $\| f^{(r)} \|_M$ = vrai sup $|f^{(r)}(t)| \leq K$. Let $0 \leq t \leq 2\pi$

$$U_n (f ; \lambda) = U_n (f, x; \lambda) = \frac{a_o}{2} + \sum_{k=1}^{n} \lambda_k^{(n)} (a_k \cos kx + b_k \sin kx) \, ,$$

where $\lambda_k^{(n)}$ $(k = 0,1,2,\ldots, n+1 \, ; \quad \lambda_o^{(n)} = 1 \, , \quad \lambda_{n+1}^{(n)} = 0)$ is a triangular

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67143

On a Relation in the Theory of Uniform and   S/041/60/012/003/007/011
Integral Approximations   C111/C222

matrix ; a_k , b_k are Fourier coefficients of $f(x)$. Let

$$E_n \left(W^{(r)}_{LK} ; \lambda \right)_L = \sup_{f \in W^{(r)}_{LK}} \| f - U_n (f ; \lambda) \|_L$$

$$E_n \left(W^{(r)}_{MK} ; \lambda \right)_M = \sup_{f \in W^{(r)}_{MK}} \| f - U_n (f ; \lambda) \|_M$$

Let (2) $\mu_k^{(n)} \le \mu_{k+1}^{(n)}$, $\mu_k^{(n)} - 2\mu_{k+1}^{(n)} + \mu_{k+2}^{(n)} \ge 0$

where $\mu_k^{(n)} = \dfrac{1 - \lambda_k^{(n)}}{k^r}$.

Theorem : If the matrix of the $\lambda_k^{(n)}$ satisfies the condition (2) then for all $r > 0$ and $n \to \infty$ there holds the following asymptotic relation uniformly with respect to the considered matrices :

Card 2/3

Card 3/3

ARTYUGIN, I.M.; GRACHEV, Yu.P.; DAVYDOV, L.N.; DOYNIKOV, Yu.P.; KIRPICHEV,
V.I.; LEVENTAL', G.B.; MELENT'YEV, L.A.; MICHURIN, K.I.; NIKONOV,
A.P.; SASHONKO, G.I.; STARIKOV, V.G.; FROLOV, V.I.; KHRILEV, L.S.;
RABINOVICH, A.L., red.; SOBOLEVA, Ye.M., tekhn. red.

[Technical and economic principles of the expansion of heat sup-
ply engineering in power systems] Tekhniko-ekonomicheskie osnovy
razvitiia teplofikatsii v energosistemakh. Moskva, Gos. energ.
izd-vo, 1961. 318 p.   (MIRA 15:3)
        (Heat engineering)   (Electric power plants)

32762
S/658/61/000/007/001/010
D251/D302

10.6000 1327

AUTHOR: Rabinovich, A.L., Candidate of Technical Sciences

TITLE: Compression of armored fillers of polymer material

SOURCE: Moscow. Fiziko-tekhnicheskiy institut. Trudy, no. 7, 1961, Issledovaniya po mekhanike i prikladnoy matematike. 3 - 19

TEXT: The author states that the article will be devoted to only one aspect of the problem - bending of plates of filler material under loads perpendicular to the plane of the plate. Experimental diagrams are given for compression of an object of foam plastic ПХВ -12 (PKhV-12) for different velocities of deformation. In the case of small velocities (approx. 0.05 %/min) the compression diagram soon becomes non-linear. The load diagram shows that the deformation is, originally, elastic. The following equation is established

$$v_s \equiv \frac{d\varepsilon}{dt} = \frac{1}{E}\frac{d\sigma}{dt} + \frac{\sigma - E_\infty \varepsilon_{s,s}}{\eta_0} \exp\left[\frac{|\sigma - E_\infty \varepsilon_{s,s}|}{m}\right].$$

(1.1)

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32762

S/658/61/000/007/001/010

Compression of armored fillers of ...   D251/D302

where σ is the stress, ε the total deformation, E the modulus of elasticity, E_{∞} the modulus of high elastic deformation, m the velocity modulus and η_0 is the coefficient of initial viscosity of high elastic deformation. Hence the approximation of

$$\frac{d\sigma}{d\varepsilon} = E\left\{1 - \frac{\sigma}{\sigma_{max}}\exp\left[-\left|\left(1 - \frac{\sigma}{\sigma_{max}}\right)^{\frac{\sigma_{max}}{m}}\right|\right]\right\}.$$ (1.7)

is derived for the case $E_{\infty}/E \ll 1$. It is shown that the mechanical characteristics of the foam plastic depend almost linearly on its density. A table of experimental values of these characteristics is quoted from data of S.D. Tkachev and I.T. Shvetsov [Abstractor's note: No reference given]. The case of plane deformation is considered (Fig. 4). Equations for the stresses

$$\left.\begin{array}{l} \tau_{xy,j} = \tau_j = F(x); \\ \sigma_{y,j} = -y\tau_j + E_{22}\eta_j/h \end{array}\right\}$$ (2.1)

and displacements

Card 2/4

Compression of armored fillers of ...

$$v_j = \frac{1}{2E_{22}}(h^2 - y^2)\tau_j' + y\eta_j\frac{1}{h} + \zeta_j.$$

$$u_j = -\frac{1}{6E_{22}}(3yh^2 - y^3)\tau_j' + \frac{y}{G_{12}}\tau_j + \frac{1}{2h}(h^2 - y^2)\eta_j' - y\zeta_j' + \psi_j,$$

(2.2)

are obtained, where

$$2\eta_j = (v_j)_{y=h} - (v_j)_{y=-h}; \quad 2\zeta_j = (v_j)_{y=h} + (v_j)_{y=-h};$$

$$2\varphi_j = (u_j)_{y=h} - (u_j)_{y=-h}; \quad 2\psi_j = (u_j)_{y=h} + (u_j)_{y=-h}.$$

Hence, the equations for the unknown loads p_x, p_y, $\bar{m}$ are obtained.
When the loss of stability is symmetrical, the critical stress σ_{cr}
is obtained in the asymptotic form

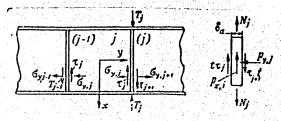$$\sigma_{cr} = \frac{T_{cr}}{t\delta_a} = \sqrt{\frac{4}{3}E_aE_{22}\left(\frac{\delta_a}{2h}\right)}.$$

(2.10)

The case of axisymmetric loss of stability is considered, and sol-
ved by means of logarithmic coordinates. An approximate determina-
Card 3/4

Compression of armored fillers of ...

32762
S/658/61/000/007/001/010
D251/D302

tion is carried out of the maximum compression stress in an armored filler, the results being given in formulae and in graphical form. There are 1 table, 12 figures and 13 references: 12 Soviet-bloc and 1 non-Soviet-bloc.

Fig. 4. Forces acting on the walls.

Card 4/4

32763
S/658/61/000/007/002/010
D251/D302

24.4200   1103. 1327

AUTHOR: Rabinovich, A.L., Candidate of Technical Sciences

TITLE: Approximate equations of spatial bending of circular
              wheels with asymmetric cross-section
              rings

SOURCE: Moscow. Fiziko-tekhnicheskiy institut. Trudy, no. 7,
              1961. Issledovaniya po mekhanike i prikladnoy mate-
              matike, 20 - 45

rings

TEXT: The author considers the spatial bending of wheels of asym-
metric cross-section, whose dimensions are comparable with the ra-
dius. He commences by enumerating the existing works dealing with
calculation of curvilinear rods and wheels. It is stated that no
attempt will be made to calculate the effect of constraint torsion.
The normal stresses and deformation of the central axis under bend-
ing are considered, the hypothesis of plane sections (justified by
Timoshenko and Göhner) being used. A Cartesian coordinate system
is adopted as shown in Fig. 1. The following equations are stated
for the displacements

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$$ds' = ds(1 + \epsilon); \quad \epsilon = \frac{dv}{ds} - \frac{w}{\rho};$$

$$\frac{1}{\rho'} - \frac{1}{\rho} = \frac{d^2 w}{ds^2} + \frac{w}{\rho^2};$$

$$\frac{1}{T'} = -\left(\rho \frac{d^3 u}{ds^3} + \frac{1}{\rho} \frac{du}{ds}\right);$$

$$\beta_1 = \Delta\varphi = \frac{v}{\rho} + \frac{dw}{ds}; \quad \beta_3 = -\frac{du}{ds};$$

$$\Delta\omega = \vartheta - \rho \frac{d^2 u}{ds^2}; \quad 0 = \frac{d(\Delta\omega)}{ds} - \frac{1}{T'} = \frac{d\vartheta}{ds} + \frac{1}{\rho} \frac{du}{ds}$$

$$(\rho = \mathrm{const} = R, \quad ds = R\, d\overline{\varphi}).$$

(1.2)

where ϵ is the extension of the central axis, ρ and T the radii of curvature and torsion respectively, β_1 and β_3 the change in the angles made between the tangent and the X and Z axes respectively, $\Delta\omega$ the change in the angle between the axes of inertia and the normal, θ the linear angle of torsion. These formulae are correct

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to the first order. The length of an element of filament (y, z)
between two infinitely close normal sections after deformation is

$$ds_x = ds(1 - \frac{y}{R}); \quad ds'_x = ds'(1 - \frac{y'}{\rho'}) \tag{1.3}$$

where ds is the length of the corresponding normal section. Hence,
it is deduced that the components of deformation of the central
axis are

$$\begin{rcases} \varepsilon = (N + M/R)/D; \\ \varkappa_1 = (MB_{22} + LB_{12})/\Delta; \\ \varkappa_2 = (MB_{12} + LB_{11})/\Delta; \end{rcases} \tag{1.10}$$

where

$$\begin{rcases} N = D\varepsilon - (B_{11}\varkappa_1 R - B_{12}\varkappa_2 R)/R^2; \\ M = B_{11}\varkappa_1 - B_{12}\varkappa_2; \\ L = -B_{12}\varkappa_1 + B_{22}\varkappa_2. \end{rcases} \tag{1.8}$$

$$\begin{rcases} B_{11} = E\bar{I}_{zz}; \quad B_{12} = E\bar{I}_{yz}; \quad B_{22} = E\bar{I}_{yy}; \quad D = EF \\ \bar{I}_{zz} = \int \frac{Ry^2 dF}{R-y}; \quad \bar{I}_{yz} = \int \frac{Ryz\,dF}{R-y}; \quad \bar{I}_{yy} = \int \frac{Rz^2 dF}{R-y}. \end{rcases} \tag{1.9}$$

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$$\Delta = B_{11}B_{22} - B_{12}^2 = E^2(\bar{I}_{yy}\bar{I}_{zz} - \bar{I}_{yz}^2).$$ (1.11)

The reduced moments of inertia are given by

$$\bar{I}_{zz\ red} = \bar{I}_{zz}\eta; \quad \bar{I}_{yy\ red} = \bar{I}_{yy}\eta; \quad \eta = 1 - \frac{\bar{I}_{yz}^2}{\bar{I}_{yy}\bar{I}_{zz}};$$ (1.13)

$$m = \Delta/B_{22}DR^2 = \frac{B_{11\ red}}{DR^2} = \frac{\bar{I}_{zz\ red}}{FR^2}.$$

By considering the case $R \rightarrow \infty$, $m \rightarrow 0$, the equation of normal stress is obtained in the form

$$\sigma_s = \frac{N}{F} + \frac{M}{FR} - \left[\frac{M}{\bar{I}_{zz\ red}}\frac{l_M}{\cos\gamma_M} + \frac{L}{\bar{I}_{yy\ red}}\frac{l_L}{\sin\gamma_L}\right]\frac{R}{R-y}$$ (1.16)

$$[l_M = y\cos\gamma_M - z(1+m)\sin\gamma_M; \quad l_L = y\cos\gamma_L - z\sin\gamma_L],$$

where

$$\operatorname{ctg}\gamma_L = \bar{I}_{yz}/\bar{I}_{zz}$$ (1.15)

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Approximate equations of spatial ...

and γ_M is the angle of inclination of the neutral line. The stresses and deformations of the central axis under torsion is then considered. The hypothesis of plane sections cannot be used in this case. General equilibrium equations are derived,

$$CW\left[\frac{d^2}{d\varphi^2}(R\vartheta + u)\right] = -R^3\left(p_b R + \frac{dm_a}{d\varphi} + \frac{d^2m_t}{d\varphi^2}\right);$$

$$B_{12}W(w) - B_{22}\left(R\vartheta - \frac{d^2u}{d\varphi^2}\right) + C\frac{d^2}{d\varphi^2}(R\vartheta + u) = -R^3 m_t;$$

$$B_{11}W^2(w) - B_{12}W\left(R\vartheta - \frac{d^2u}{d\varphi^2}\right) - DR^2\left(\frac{dv}{d\varphi} - w\right) =$$

$$= -R^3\left(\frac{dm_b}{d\varphi} - p_n R\right);$$

$$DR^2\frac{d}{d\varphi}\left(\frac{dv}{d\varphi} - w\right) = -R^3(p_t R + m_b).$$

(3.4).

and applied to the special case when the principal axes of inertia of the cross-section lie along the normal and binormal ($B_{12} = 0$).

Periodicity or single-valuedness is considered, this having been

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already investigated, in the case of normal bending, by Papkovich. The special case when p and m do not depend specifically on v and θ is considered as an example. If p and m are known functions of φ it is shown that the equations of equilibrium of an element re= duce to

$$W(\frac{dM}{d\varphi}) = (\frac{dp_n}{d\varphi} - p_t)R^2 - RW(m_b),$$ (4.1)

$$QR = -\frac{dM}{d\varphi} - Rm_b; \quad NR = \frac{d^2M}{d\varphi^2} + R\frac{dm_b}{d\varphi} - p_nR^2,$$ (4.2)

where N, Q, M are forces acting in the plane of the elemental ring, and G, H, and L are forces acting out of the plane of the ring. Hence

$$M = A_1\cos\varphi + A_2\sin\varphi + A_3 + \int (F_Q - m_b) R\,d\varphi -$$

$$- \sin\varphi \int F_Q R\sin\varphi\,d\varphi - \cos\varphi \int F_Q R\cos\varphi\,d\varphi;$$ (4.7)

$$L = A_4\cos\varphi + A_5\sin\varphi - \sin\varphi \int F_L R\cos\varphi\,d\varphi +$$

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$$+ \cos \varphi \int F_L R \sin \varphi \, d\varphi, \qquad (4.7)$$

where $\quad F_Q(\varphi) = (\frac{dp_n}{d\varphi} - p_t); \; F_L(\varphi) = p_b R + \frac{dm_n}{d\varphi} - m_t \qquad (4.8)$

and the A_i are constant of integration. Also

$$GR = A_o - \int p_b R^2 \, d\varphi, \qquad (4.3)$$

$$H = -\frac{dL}{d\varphi} + GR - m_n R. \qquad (4.5)$$

Hence, the forces in the plane of the ring and out of the plane of the ring may be evaluated. By applying the variation method to Lagrange's equation, the energy of deformation is shown to be of the form

$$2V = \int_s \left[\frac{M'^2}{B_{11}} (1+m) + \frac{2ML}{l} B_{12} + \frac{L^2}{B_{22}} + \right.$$

$$\left. + \frac{H^2}{C} + \frac{N^2}{D} + \frac{2MN}{DR} \right] ds, \qquad (5.3)$$

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and hence the equation

$$w = \frac{2PR^3}{\pi B_{11 \text{ appl.}}} \left(\frac{m}{1 + m} - \frac{1}{9} \cos 2\varphi \right)$$

is derived for the case $B_{12} = 0$ which gives an approximation for
the maximum bending correct to 5 - 6 %. As an illustration the case
of Castiliano's equation applied to a closed ring is considered.
There are 7 figures and 22 references: 17 Soviet-bloc and 5 non-So-
viet-bloc. The reference to the English-language publication reads
as follows: J.H. Michell, The Uniform Torsion and Flexure of Incom-
plete Tor.: with Application to Helical Springs, Proc. of London.
Mathem. Society, 1900, 31, pp. 130 - 146.

Card 8/9

S/658/62/000/009/005/013
A059/A126

AUTHOR: Rabinovich, A.L., Candidate of Technical Sciences

TITLE: The correlation equations for the plane stressed state of some re-
             inforced polymers

SOURCE: Moscow. Fiziko-tekhnicheskiy institut. Trudy. no. 9, 1962. Is-
             sledovaniya po mekhanike i prikladnoy matematike. 54 - 68

TEXT: Correlation was established between the main parameters determining
the state of strain and that of stress of the unit layer in the case of the plane
problem. Approximate correlation equations were obtained between stresses and
strain rates in the case of delta-wood- or glass-reinforced CBAM (SVAM) plas-
tics. The reinforcing elements were considered as an elastic anisotropic plate,
and the polymer binder as an isotropic plate. The examination performed on the
approximate model of the anisotropic reinforced plastic (the whole unit layer)
resulted in the statement that its deformation consists of two constituents,
namely the elastic one and the highly elastic one: $\varepsilon_i = e_i + \varepsilon_i$. The con-
stituents of these two kinds of deformation are related to the mean stresses as

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The correlation equations for the plane ....

follows:

$$\omega_1 \, e_1 = \sum_{k=1}^{3} a_{1k} \, \sigma_k, \quad \text{or} \quad \sigma_1 = \sum_{k=1}^{3} c_{1k} \, e_k \, \omega_k \quad (1 = 1, 2, 3) \quad (10)$$

(for elastic deformation), and

$$\omega_1 \, \dot{e}_1^* = F_2 \sum_{k=1}^{3} \sum_{n=1}^{3} a_{1k} \, c_{kn,2} \, \omega_n \, \epsilon_{n,2}^* \quad (1 = 1, 2, 3) \quad (11)$$

(for highly elastic deformation), where σ_1 is the mean stress in the unit lay-
er. the c's are the elastic constants, the a's the constants of elastic deforma-
tion and the ω's the factor of the inverse transformation coefficients of the
matrixes from the original coordinate system to another by displacement. These
equations are generalizations of Hook's law. The differential equations

$$\omega_1 \frac{\partial \epsilon_1^*}{\partial t} = \frac{\psi_1^*}{T_2^*}, \quad \frac{1}{T_2^*} = \frac{1}{\eta_2} \exp \left[\frac{\left| f_r^* \right|_{max}}{m_2} \right] \quad (23)$$

were developed, where the formula used for the calculation of the function
$\psi_1^* = \psi_1 / a_{11}^2 E_2^2 F_2$ is

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The correlation equations for the plane ....

$$\psi_1^* = \sum_{k=1}^{3} (A_{1k} \omega_k e_k - c_{1k}^* \omega_k \varepsilon_k^*), \quad \text{or} \quad \psi_1^* = \sum_{n=1}^{3} (\alpha_{1k} \sigma_k - c_{1k}^* \omega_k \varepsilon_k^*),$$

and that for the function $f_1^* = f_1/a_{11}E_2$ is

$$\omega_1 f_1^* = \sum_{k=1}^{3} (\overline{A}_{1k} \omega_k e_k - \overline{c}_{1k}^* \omega_k \varepsilon_k^*), \quad \text{or} \quad \omega_1 f_1^* = \sum_{k=1}^{3} (\overline{\alpha}_{1k} \sigma_k - \overline{c}_{1k}^* \omega_k \varepsilon_k^*).$$

The coefficients of highly elastic deformation are calculated from these equations developed by Maxwell and G.I. Gurevich, and generalized for the case of the anisotropy considered. The initial viscosity coefficient and the modulus of the velocity of highly elastic deformation, respectively, are:

$$\eta_2 = \eta_{2,2}/a_{11}^2 E_2^2 F_2, \quad m_2 = m_{2,2}/a_{11} E_2, \tag{24}$$

where

$$a_{11}^2 A_{1k} = \frac{3}{2} \left(\frac{1 - \mu_2}{1 - \mu_2^2} \right)^2 \frac{1}{\omega_k} a_{1k} - \frac{1 - 4\mu_2 + \mu_2^2}{2(1 - \mu_2^2)^2} (a_{11} + a_{12}) \delta_k;$$

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$$a_{11} \overline{A}_{ik} = \frac{3}{2} \left(\frac{1 - \mu_2}{1 - \mu_2^2} \right) \delta_{ik} - \frac{1 - 2\mu_2}{2 (1 - \mu_2^2)} \delta_i \delta_k , \qquad (21)$$

and also

$$a_{11}^2 \alpha_{ik} = \sum_{n=1}^{3} a_{11}^2 A_{in} a_{nk}; \qquad a_{11} \overline{\alpha}_{ik} = \sum_{n=1}^{3} a_{11} \overline{A}_{in} a_{nk}$$

or

$$a_{11}^2 \alpha_{ik} = \frac{3}{2} \left(\frac{1 - \mu_2}{1 - \mu_2^2} \right)^2 \sum_{n=1}^{3} \frac{1}{\omega_n} a_{in} a_{nk} - \frac{1 - 4 \mu_2 + \mu_2^2}{2 (1 - \mu_2^2)^2} (a_{11} + a_{12}) \sum_{n=1}^{3} a_{nk} \delta_n;$$

$$a_{11} \overline{\alpha}_{ik} = \sum_{n=1}^{3} \left[\frac{3}{2} \left(\frac{1 - \mu_2}{1 - \mu_2^2} \right) \delta_{in} - \frac{1 - 2\mu_2}{2 (1 - \mu_2^2)} \delta_i \delta_n \right] a_{nk} ,$$

where $\alpha_{ik} = \alpha_{ki}$. V.V. Sokolovskiy is mentioned. There are 3 figures and 1 table.

Card 4/4

S/020/63/148/006/020/023
B192/B102

AUTHORS: Rabinovich, A. L., Turazyan, A. V.

TITLE: Effect of the deformation rate on the deformation and the
                  strength of oriented glass-reinforced plastics

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 6, 1963,
                  1350-1353

TEXT: The strength properties of the glass-reinforced plastic СВАМ (SVAM)
und of duraluminum on mechanical deformation was studied. The equation set
up by Rabinovich (Tr. Moskov. fiz.-tekhn. inst. no. 9 (1962)) were used
to study the relationship between stress σ, yield strength σ_b, and the
deformation rate v_ε for the case of isothermal uniaxial deformation
when the direction of deformation makes an angle α with the elasticity
symmetry axis. If σ_b^0 designates the value of σ_b for the reference
deformation rate of e.g. $v_{\varepsilon,0}$ - 1%/min, then the following relation is
obtained on the assumption $\sigma_b/\sigma_b^0 > 0.2$
Card 1/3

Effect of the deformation rate ...

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B192/B102

$$\sigma_b - \sigma_b^0 = \frac{1}{1 + E_{\infty, x}/E_{xx}} \, m_x \ln 10 \, \lg \left(\frac{v_\epsilon}{v_{\epsilon, 0}} \right) \tag{5}$$

where E_{xx} is the elastic modulus in the x direction of the stress, $E_{\infty, x}$ is the modulus of the high-elasticity deformation and m_x is the velocity modulus. The experiments showed that the maximum deformation $\epsilon_{x, max}$ (compression of SVAM) is virtually independent of v_ϵ : With $\alpha = 0°$ and v_ϵ from 0.02 to 234% per min, $\epsilon_{x, max}$ was at 3.3 to 2.6%, with $\alpha = 45°$ and v_ϵ from 2.9 to 355% per min, $\epsilon_{x, max}$ was at 6.5 to 7.1%. For the elongation of duralumin the $\epsilon_{x, max}$ values for $v_\epsilon = 0.02\%$ min - 6000%/min are at 12.4-11.6. A linear relationship was obtained between σ_b and $\log v_\epsilon$ which is consistent with the theoretical formula. From this relationship it follows that $m_x = 173$ kg/cm^2 for 0° and $m_x = 55$ kg/cm^2 for $\alpha = 45°$. There are 2 figures and 1 table.

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Effect of the deformation rate ...

S/020/63/148/006/020/023
B192/B102

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute for Chemical Physics of the Academy of Sciences of the USSR)

PRESENTED: August 16, 1962, by A. V. Topchiev, Academician

SUBMITTED: August 16, 1962

Card 3/3

L 14361-63   EPR/EWP(r)/EWP(j)/EPF(c)/EWT(m)/BDS/T-2   AFFTC/ASD   Ps-4/
Pc-4/Pr-4   RM/WW
ACCESSION NR: AP3003844   S/0020/63/151/003/0528/0531

AUTHORS: Nikishin, A. A.; Rabinovich, A. L.

TITLE: Some problems on cylindrical flexure of sandwich plates with consideration
of plastic deformation of fiberglass skin

SOURCE: AN SSSR. Doklady*, v. 151, no. 3, 1963, 528-531

TOPIC TAGS: cylindrical flexure, sandwich plate, plastic deformation, fiberglass,
creep

ABSTRACT: Calculations and experiments show that the total flexure and tensions
in skins of elastic sandwich plates, determined by different theories, are prac-
tically the same if the parameter characterized by compression of filler in
transverse direction is sufficiently large. At the same time, in materials with
fiberglass skins, due to the presence of binding polymers, elastic deformation
occurs which causes a much higher dependency of mechanical parameters on the speed
of deformation and temperature, than in the case of metals. There is also the
possibility of creep at normal temperature. Orig. art. has 2 figures and 17
formulas.

Card 1/2/   Association: Inst. of Chemical Physics, Academy of Sciences, SSSR

ACCESSION NR: AP4040485

AUTHORS: Bernatskiy, A. D.; Rabinovich, A. L.

TITLE: On the deformed state of certain network polymers

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 6, 1964, 1060-1067

TOPIC TAGS: polymer, polymer deformation, MDF 1 polyacrylate, MDF 2 polyacrylate, MGF 9 polyacrylate, ED 5 epoxy resin, 38 epoxide resin, Maxwell equation, RMI 250 dynamometer, KM 6 cathetometer, KCh 51 oscillograph

ABSTRACT: The authors experimented with stretching and compressing of polyacrylics MDF-1, MDF-2, MGF-9 and of epoxide resins ED-5 and No. 38. Cylindrical test samples for compression were 12 ± 1 mm in diameter and 18 ± 1.5 mm in height. Special adaptations used were as set forth by A. A. Nikishin (Standartizatsiya, 1963, No. 7, 28), and a 10-ton dynamometer was employed. Loads and strain measurements were recorded photographically in the manner developed by Gurov and Nikishin. Elongation samples (25 mm in length and 5 mm in diameter) were stretched in the RMI-250 machine. Strains were measured with cathetometer KM-6 (0.04% accurate), and loads were recorded on a KCh-51 oscillograph. Observations of

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ACCESSION NR: AP4040485

stress relaxation were also made. Test results (stress vs strain) were plotted including compression and elongation curves of polyacrylic esters MDF-1 and epoxy resins ED-5 and No. 38, and the relaxation of MDF-2 (experimental and theoretical). Photographs show various stages of deformation including sample rupture. Strains were found to be reversible for all samples, and stress relaxation followed the generalized Maxwell equation; considerable influence of the polymer structure on the parameters of the theoretical equation was revealed. The authors express their gratitude to Yu. M. Sivergin and N. B. Guseva for developing the method of sample production and to N. P. Kochkin for participating in the experiments. Orig. art. has: 6 graphs, 6 equations, 2 tables, and 10 photographs.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AN SSSR)

SUBMITTED: 10Jul63   ENCL: 00

SUB CODE: MT   NO REF SOV: 007   OTHER: 000

Card 2/2

RABINOVICH, A.L.

Bonding equations describing a plane state of stress in
oriented glass plastics. Dokl. AN SSSR 153 no.4:816-819
D '63.   (MIRA 17:1)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademi-
kom A.P. Aleksandrovym.

RABINOVICH, A.L. (Moscow)

"The main problems related to oriented fibre glass reinforced plastics"

Report presented at the 2nd All-Union Congress on Theoretical and Applied
Mechanics, Moscow 29 Jan - 5 Feb 64.

S/0258/64/004/001/0090/0100

ACCESSION NR: AP4026957

AUTHORS: Rabinovich, A. L. (Moscow); Verkhovskiy, I. A. (Moscow)

TITLE: On elastic constants of oriented fiber glass

SOURCE: Inzhenernyy shurnal, v. 4, no. 1, 1964, 90-100

TOPIC TAGS: plastic, glass fiber, modulus of elasticity, Poisson ratio, SVAM plastic

ABSTRACT: Type SVAM plastic with highly oriented glass fibers has been used with BF-4 binder to determine the modulus of elasticity E and Poisson's ratio μ experimentally. The material was extruded under 30 kg/cm² pressure, 160C polymerisation temperature, and 15-minute aging time. In all, five cross-fibered sheets and one unidirectional sheet were used. First, the elasticity constants of an elementary (single lamina) layer were determined, using approximate formulas defining these constants as a function of glass fiber elasticity and relative binder content. A good agreement was obtained with experimental measurements. Next, the four independent constants of a laminated fiber glass were calculated and were shown to satisfy the theoretical formulas for monolithic structured materials.

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ACCESSION NR: AP4026957

Both E and μ in this case were shown to depart from experimental values. This is attributed to anomalies arising at the free boundary of the specimen not accounted for in the theory. Orig. art. has: 17 formulas, 5 figures, and 3 tables.

ASSOCIATION: none

ENCL: 00

SUBMITTED: 23Mar63

DATE ACQ: 15Apr64

OTHER: 000

NO REF SOV: 017

SUB CODE: MA

Card 2/2

KARGIN, V.A., akademik; MALINSKIY, Yu.M.; RABINOVICH, A.L.; TRIFEL', B.Yu.

Strength of model specimens of unidirectional structures. Dokl.
AN SSSR 157 no.6:1273-1275 Ag '64   (MIRA 17:9)

1. Fiziko-khimicheskiy institut im. L. Ya. Karpova i Institut
khimicheskoy fiziki AN SSSR.

L 21066-65   EPF(c)/EPR/EPA(s)-2/EWP(j)/EWT(m)/T/EWP(v)   Pc-4/Pr-4/Ps-4/
Pt-10   ASD(f)-3   RM/WW

AUTHOR: Kargin, V. A.; Malinskiy, Yu. M.; Rabinovich, A. L.; Trifel', B. Yu.

TITLE: On the strength of model specimens of unidirectional structures

ABSTRACT: The authors made an attempt to estimate the distribution of stresses
in a certain model of a heterogeneous system, such as glass-plastics, in order
to find the main factors which determine the strength of the oriented materials.
The experimental investigation was carried out by the optical-polarization method,
and the theoretical treatment-with the Maxwell equation generalized by

constants. it was found that there are, at the rupture location of the

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L 21066-65

ACCESSION NR: AP4044887

elements, in the adjoining binding material, large concentrations of shearing stresses that may be come the foci of the rupture of the next element. Approxima-tions are given for the distribution of stresses and strains. Orig. art. has: 3 figures and 7 equations

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physical Chemical Institute) Institut khimicheskoy fiziki, Akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences, SSSR)

Card2 / 2

OGIBALOV, Petr Matveyevich; SUVOROVA, Yuliy Vasil'yevna. Pri-
        nimal uchastiye RABINOVICH, A.L., kand. tekhn. nauk,
        dots.; BEZUKHOV, N.I., zasl. deyatel' nauki i tekhniki
        RSFSR doktor tekhn. nauk, prof., retsenzent; ZHUKOV,
        A.M., doktor fiz.-mat. nauk prof., retsenzent;
        BRONSKIY, A.P., kand. fiz.-matem.nauk, dots., retsenzent;
        DODORTSEVA, Ch.I., red.

        [Mechanics of reinforced plastics] Mekhanika armirovannykh
        plastikov. Moskva, Izd-vo Mosk. univ., 1965. 479 p.
                                        (MIRA 18:7)

L 15036-66   EWT(m)/EWP(j)/T/ETC(m)-6   WW/RM

ACC NR: AP6003952   SOURCE CODE: UR/0374/65/000/005/0149/0151

AUTHOR: Babich, V. F. (Moskva); Rabinovich, A. L. (Moskva)

ORG: none

TITLE: Elastic component of deformation in cross-linked polymers

SOURCE: Mekhanika polimerov, no. 5, 1965, 149-151

TOPIC TAGS: polymer, elasticity, elastic deformation, tensile stress, durability, cross linked polymer, temperature dependence, chemical composition, elastic modulus

ABSTRACT: With the use of the method of instantaneous unloading it is shown that the value of the elastic deformation in cross-linked polymers is determined by tension and is linearly dependent on stress and temperature. It is independent of the value of general deformation, the duration of stress (loading) and the prehistory of the sample. The value of Hooke's modulus is defined by the chemical composition of the polymer and is independent of its structure. Authors thank Ya. D. Avrasin and Yu. M. Sivergin for the curteous delivery of polymers. Orig. art. has: 4 figures. [Based on author's abstract]

SUB CODE: 11/ SUBM DATE: 11Apr65/ ORIG REF: 007/

Card 1/1   UDC: 678:531.02.531.096

L 21252-66   EWT(m)/EWP(j)/T/ETC(m)-6   WW/RM

ACC NR: AP6008397   (A)   SOURCE CODE: UR/0374/66/000/001/0003/0006

AUTHOR: Babich, V. F.; Sivergin, Yu. M.; Berlin, A. A.; Rabinovich, A. L.

ORG: Institute of Chemical Physics AN SSSR, Moscow (Institut khimicheskoy fiziki AN SSSR, Moskva)

TITLE: Correlation between the equilibrium modulus of high elasticity and the number of cross-links in rigid network structure polymers

SOURCE: Mekhanika polimerov, no. 1, 1966, 3-6

TOPIC TAGS: crosslinking, polymer structure, elastic modulus, temperature dependence, temperature effect, equilibrium

ABSTRACT: The dependence of the equilibrium modulus of the high elasticity of polymers of olygoesteracrylates on temperature was investigated. The modulus was shown to increase with the raising temperature. It was determined that the higher the extent of cross-linking, the lower the correlation of experiment with theory concerned. Orig. art. has: 4 figures, 3 formulas, and 1 table. [Based on authors' abstract.]   [NT]

SUB CODE: 11, 20/SUBM DATE: 17Jul65/ ORIG REF: 004/ OTH REF: 003/

Card 1/1 BLG   UDC: 678:539.32

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nitsy no.1 (glavnyy vrach - zasluzhennyy vrach RSFSR Ye.V.Prokhoro-
vich) i Gosudarstvennogo nauchno-issledovatel'skogo pediatricheskogo
instituta Ministerstva zdravookhraneniya RSFSR (dir. - kandidat me-
ditsinskikh nauk V.N.Karachevtseva; nauchnyy rukovoditel' starshiy
sotrudnik Z.I.Edel'man) Moskva.
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1 det. 3 no.3:9-15 Jl-Ag '58   (MIRA 11:8)

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cheskoy bol'nitsy No.1 (glavnyy vrach - zaslyzhennyy vrach RSFSR
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stituta (for Chayka)
                        (TUBERCULOSIS)

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Rabinovich) Leningradskogo nauchno-issledovatel'skogo instituta
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                    (LUNGS--COLLAPSE)   (NERVOUS SYSTEM)

RABINOVICH, A.M., prof.; STREPETOVA, T.N., mladshiy nauchnyy sotrudnik

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USSR/Engineering   Jun 48
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                         (Atomic energy)

14(5)   SCV/19-59-2-14/600

AUTHOR: Rabinovich, A.M.

TITLE: A Device for Recording the Process of Directed
               Drilling

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 2, p 11 (USSR)

ABSTRACT: Class 5a, 18_{10}. Nr 74507 (375921/423 of 19 August 1947).
               Submitted to the Ministry of Oil Industry of the South-
               ern and Western Regions of the USSR. A device for re-
               cording the process of directed drilling, including a
               weight attached off center on a rotating axle inside
               a drum bearing the recording paper. The drum rotates
               freely on a vertical axle fixed in a pipe union on
               the top of a curved pipe (or any other deflector),
               and bears a writing device which moves along the drum
               generatrix by means of clockwork and registers the po-
               sition of the plane of deflection from the curvature
               plane of the well.

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14(5)   SOV/19-59-6-7/309

AUTHOR: Rabinovich, A.M.

TITLE: A Shock Absorber

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 6, p 6 (USSR)

ABSTRACT: Class 5a, 41. Nr 118478 (608094 of 19 Sep 1958).
               Depending on Author's Certificate Nr 109167). A shock
               absorber in which the piston is provided with a rhomb-
               like projection. The inner cylinder face has two
               bushings with guiding grooves. Both the projection
               and the bushings are provided with screw-like faces,
               so that the reciprocating piston rotates and trans-
               mits the rotary motion to the drill rods. The design
               includes a second piston with a shock absorber which
               prevents the twisting of rods if the plunger jams.

Card 1/1

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(MIRA 14:2)

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    [Nitrogen as an alloying element for steel] Azot kak legiruiushchii
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                                                (MIRA 14:4)
    (Nitrogen)   (Steel alloys--Metallography)

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L.D., tekhn. red.

[Pneumatic devices for the drive of the deep equipment]Gid-
ropnevmaticheskie ustroistva v prirode glubinnonasosnoi
ustanovki. Moskva, Gostoptekhizdat, 1962. 98 p.
                                           (MIRA 16:4)

(Sucker rods)

RABINOVICH, A.M.

Approximate method for calculating the curve of a force
acting on the head of the balance beam of a pumping unit.
Neft.khoz. 41 no. 1:52-57 Ja '63.   (MIRA 17:7)

RABINOVICH, A.N., professor, doktor tekhnicheskikh nauk.

Fundamentals of the theory of automatic assembly. Vest.mash. 33 no.10:86-93
0 '53.   (MLRA 6:10)

1. L'vovskiy politekhnicheskiy institut.   (Assembly-line methods)

RABINOVICH, A. N.   (Editor)

"Speed and Power Cutting of Metals," Mashgiz, Kiev, 1955

This book specifically discusses Mikrolite (mikrolit) cutting tools. Chapter II contains considerable data on technical aspects of mikrolite cutting tools.

Abstract D 329020, 20 Oct 55

RABINOVICH, A.N., doktor tekhn. nauk; CHEREPASHEVSKIY, N.I., kand. tekhn. nauk; VASILENKO, I.N., inzh.

Transfer machines and lines. Mashinostroenie no.5:8-12 S-O '63.
(MIRA 16:12)

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RABINOVICH, A. N.

TJ1160.R25   TREASURE ISLAND BOOK REVIEW   AID 779 - M

RABINOVICH, A. N.
    AVTOMATIZATSIYA TEKHNOLOGICHESKIKH PROTSESSOV V MASHINOSTROYENII
    (Automation of processing technique in machine-building). Edited
    by T. I. Chumachenko. State Publishing House for Technical
    Literature, 1955. 410 p., 5,000 copies printed.

This book discusses general problems of automation, the automation
of feeding machine-tools with blanks, and automation of metal-cutting
machine-tools. It is intended to help technical personnel at the
plants where automatic machinery is used or being introduced, and as
a textbook for students in higher technical colleges where courses on
automation are given. The author claims that this book is the first
presentation of various aspects of automation in machine-building in
one book. This statement may be true for the Ukrainian SSR, where
it is published. However, it is not the first monograph on the
subject in the USSR, as is evidenced from the list of some 95 items
previously published there and the books on the same subject published
since.

This book lacks or treats inadequately many matters of automation
technique and devices described elsewhere. It gives only a few

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samplings of automatic lines in operation, and the theory and mathematical formulae are given but sparingly. Only a few original innovations in mechanisms and devices of automation are discussed or referred to, as for example: Sokolov's automatic hand or Kochegarov's electrical-contact device for machining control of shafts. For these reasons, therefore, this book can not be considered as the complete presentation of this subject. The book has 316 sketches, graphs and drawings, 14 tables, some 50 mathematical formulae, a few GOST standards, and 98 items in the bibliography, 95 of them Russian.

Chapter I. "Automatic Loading" (p. 11-126). General considerations on feeding mechanisms. Classification of blanks. Classification of feeders according to orientation of their blanks: gripping mechanisms, mechanisms for initial orientation, simultaneous gripping and initial orientation mechanisms, mechanisms for secondary orientation, compulsory secondary orientation mechanisms, mechanisms for double-orientation, simultaneous gripping and double-orientation mechanisms.

Bunker component parts. Classification of feeding mechanisms by construction. Piece-by-piece blank feeding mechanisms: pocket-type

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loading device, analysis of disc pocket-type bunker, testing
installation for loading mechanisms, ways for increased productivity
of pocket-type loading mechanisms, hook-type chargers, their con-
struction, lever-type hopper.

Bunker-loading mechanisms with batch feeding: chute-type stoker,
analysis of disc-type bunkers, blade-type chute hopper.

Bunker-loading mechanisms with continuous feeding of blanks: slot
hopper with continuous blank feeding, tubular-type stokers, their
analysis, vibration-type hopper. Feeding mechanisms: separators,
feeders, combined-feeding mechanisms.

Chutes: classification, theory and design of inclined box-type
chutes; roller type chutes, sliding chutes curved and special ones
for blanks with collars. Magazines.

Chapter II. "Automation of Gripping Devices" (p. 127-162). Mechan-
ical, clip and diaphragm-type gripping mechanisms, clamps with stiff
locking device. Pneumatic gripping devices; their construction,
lever and wedge type, hydraulic clamps, formulae for their appli-
cation, electromagnetic and electromechanical clamps, push rods

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and ejectors, various devices for set-up and removal machined blanks.

Chapter III. "Automation of Work on Metal-cutting Machines" (p. 163-228). Automation of turning lathe, precise stops, accelerated shift-ing of components; mechanization of turns and of headstocks; auto-mation of plain cycles of turning lathes; automation of threading-generating machines; automation of turret head's motions. Automation of drilling operation in feeding mechanisms and other attachments; total automation of vertical drilling machines; automated table for drilling machines with pneumatic and hydraulic operation. Automation of milling operations: automation of operating cycles of milling machine, automated attachments for milling, automated graduating attachments. Automation of grinding operations: automation of centerless grinding machines. Automation of surface grinding machines, and automation of cylindrical grinding machines. Auto-mation of broaching operations. Automation of gear-cutting oper-ation. Automation of gear-milling machines. Automation of gear shaving machines.

Chapter IV. "Automation of Control Operations" (p. 229-328). Methods of automatic control of linear dimensions: control of basic linear

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dimensions and control of deviations from exact geometrical form.
Principles of operation of control automats: components and
operating cycle of control automats. Measuring devices of control
automats; mechanical, electrical-contact, electrical-induction,
contact-induction, capacitance, photo-electric and pneumatic
measuring devices. Conveying devices of control apparatuses,
continuous and interrupted. Various constructions of control
automats; turning devices and impulse-accumulators, mechanical and
electrical. Description of control automatic devices: L'vov Poly-
technic Institute automat to control cylindrical parts and chain
slats; the 'Kalibr' plant automat for control of tapered rollers;
the ZIS (Plant im. Stalin) automat for control of piston ring
height. Automatic size control of parts being machined: classi-
fication of control devices, Kochegarov's electric-contact device
for machining control of shafts; Kochegarov's electric-contact
device and the pneumo-electric device for machining control of
shafts. Mechanisms with rigid calibers for control of machined
holes; mechanisms for control of holes with contact points;
various mechanisms for control of thread height and diameter of
thread. Adjusting mechanisms. Construction controls based on
indirect method of measurement. Automatic control of elesticity

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and heat treatment: mechanical method for elasticity and hardness
control, electromagnetic method for heat-treatment control. The
RSF-2 automatic machine for control of ball hardness and the RF-I
apparatus for control bearing-ring carbonization.

Chapter V. "Lines of Automatic Machines" (p. 329-402). Classi-
fication and types, the Koshkin rotor line. Design of technological
stages in lines with automatic machines: Five prerequisites to be
satisfied for such design selection of most advanced tools and
methods of cutting. Choice of equipment for automatic lines,
methods of setting-up automatic lines, machine tool aggregates for
automatic lines. Part conveying mechanisms in automatic lines:
reciprocating and chain conveyers; conveyers with mechanical or
pneumatic hands, Sokolov's automatic hand; conveyers with trays.
Mechanisms for automatic clamping and fixing. General set-up of
automatic lines. Setting lines operating on the principle of 'open
passage' for machined parts ("The 'open passage' principle is used
in 32 of 40 automatic lines at present in operation in the USSR",
p. 369). Division of automatic lines into sections; devices for
storing and distribution of semi-finished parts; building automatic
lines with universal machine-tools. Mechanisms for operation of
automatic lines. Brief description of a few automatic lines: the
line machining the engine-head of the KhTZ (Khar'kov Tractor Plant)

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tractor, the AL-6 automatic line for machining automobile engine-
blocks, the AL-10 automatic line at a section of a machine plant
for pistons, the AL-12 automatic line for polishing piston pins,
and the automatic line for polishing the outer spherical surface
of barrel-shaped rollers used in double-row roller bearings.

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RUBINSKIY, Ya.V., tekhnicheskiy redaktor

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stroit. lit-ry, 1956. 157 p.   (MIRA 9:7)
          (Machine tools)

RABINOVICH, Avraam Nokhimovich, professor, doktor tekhnicheskikh nauk;
SERDYUK, V.K., inzhener, redaktor; GAVRILOV, A.N., doktor tekhniche-
skikh nauk, professor, retsenzent; HUDENSKIY, Ya.V., tekhnicheskiy
redaktor...

[Automatization and mechanization of selected processes in machine
and instrument construction] Avtomatizatsiia i mekhanizatsiia
sborochnykh protsessov v mashinostroenii i priborostroenii. Kiev,
Gos.naucho-tekh.izd-vo mashinostroitel'noi lit-ry, 1956. 171 p.
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(Automation) (Machinery industry)